

CLAIMS

1. A nonwoven fabric containing ultra-fine fibers, which contains staple fibers with a fiber fineness of 0.0001 to 0.5 decitex and a fiber length of 10 cm or less, and has a weight per unit area of 100 to 550 g/m², an apparent density of 0.280 to 0.700 g/cm³, a tensile strength of 70 N/cm or more, and a tear strength of 3 to 50 N.

2. A nonwoven fabric containing ultra-fine fibers, according to claim 1, wherein said staple fibers are 1 cm or more and are entangled with each other.

3. A nonwoven fabric containing ultra-fine fibers, according to claim 1 or 2, wherein the 10% modulus in the length direction is 8 N/cm or more.

4. A nonwoven fabric containing ultra-fine fibers, according to any one of claims 1 through 3, wherein said staple fibers are polyester-based fibers and/or polyamide-based fibers.

5. A method for producing a nonwoven fabric containing ultra-fine fibers comprising the steps of needle-punching composite fibers of 1 to 10 decitexes convertible into bundles of ultra-fine fibers of 0.0001 to 0.5 decitex, to produce a nonwoven fabric containing composite fibers, and performing hydro-entanglement at a pressure of at least 10 MPa.

6. A method for producing a nonwoven fabric containing ultra-fine fibers, according to claim 5, wherein the nonwoven fabric containing composite fibers produced by said needle punching has an apparent density of 0.120 to 0.300 g/cm³.

7. A method for producing a nonwoven fabric containing ultra-fine fibers, according to claim 5 or 6, wherein a nozzle having holes with a diameter of 0.06 to 0.15 mm is used to perform said hydro-entanglement.

8. A method for producing a nonwoven fabric containing ultra-fine fibers, according to any one of claims 5 through 7, wherein a treatment for forming ultra-fine fibers is performed after performing said needle punching but before performing said hydro-entanglement and/or simultaneously with said hydro-entanglement.

9. A method for producing a nonwoven fabric containing ultra-fine fibers, according to any one of claims 5 through 8, wherein splitting into two or more sheets perpendicularly to the thickness direction is performed before performing said hydro-entanglement.

10. A method for producing a nonwoven fabric containing ultra-fine fibers, according to any one of claims 5 through 9, wherein pressing to 0.1 to 0.8 time in thickness is performed after performing said hydro-entanglement.

11. A leather-like sheet, which comprises a nonwoven fabric and is made of a fiber material of substantially a non-elastic polymer.

12. A leather-like sheet, according to claim 11, wherein it is raised at least one surface and dyed.

13. A leather-like sheet, which contains a dyed nonwoven fabric containing ultra-fine fibers with a fiber fineness of 0.0001 to 0.5 decitex, a fiber length of 10 cm or less, a weight per unit area of 100 to 550 g/m² and an apparent density of 0.230 to 0.700 g/cm³, and has a tear strength of 3 to 50 N and satisfies the following formula:

$$\text{Tensile strength (N/cm)} \geq 0.45 \times \text{Weight per unit area (g/m}^2) - 40$$

14. A leather-like sheet, according to claim 13, wherein it is substantially made of a fiber material.

15. A leather-like sheet, according to claim 14, wherein said fiber material is fibers of a non-elastic polymer.

16. A leather-like sheet, according to any one of claims 13

through 15, wherein it is raised at least one surface.

17. A leather-like sheet, according to any one of claims 11 through 16, wherein in an abrasion test by the Martindale method, the abrasion loss after 20000 times of abrasion is 20 mg or less and the number of pills is 5 or less.

18. A leather-like sheet, according to any one of claims 11 through 17, wherein said ultra-fine fibers are made of a polyester and/or a polyamide.

19. A leather-like sheet, according to any one of claims 11 through 18, wherein it contains ultra-fine fibers with a fiber length of 1 to 10 cm entangled with each other.

20. A leather-like sheet, according to any one of claims 11 through 19, wherein said fiber material contains fine particles.

21. A leather-like sheet, according to claim 20, wherein the particle diameter of said fine particles is from 0.001 to 30 μm .

22. A method for producing a leather-like sheet, comprising the step of dyeing the nonwoven fabric containing ultra-fine fibers as set forth in any one of claims 1 through 4.

23. A method for producing a leather-like sheet, according to claim 22, wherein the sheet is pressed to 0.1 to 0.8 time in thickness.

24. A method for producing a leather-like sheet, according to claim 22 or 23, wherein it is raised on the surface using sand paper.

25. A method for producing a leather-like sheet, comprising the steps of needle-punching composite fibers convertible into bundles of ultra-fine fibers of 0.0001 to 0.5 decitex, to make them entangled with each other, subsequently converting them into ultra-fine fibers, to form a nonwoven fabric containing ultra-fine fibers, then performing hydro-entanglement at a pressure of at least 10 MPa, for re-entangling, and subsequently dyeing.

26. A method for producing a leather-like sheet, according to claim 25, wherein a nozzle having holes with a diameter of 0.06 to 0.15 mm is used for performing the hydro-entanglement.

27. A method for producing a leather-like sheet, according to claim 25 or 26, wherein said composite fibers are islands-in-sea type conjugate fibers.

28. A method for producing a leather-like sheet, according to any one of claims 22 through 27, wherein it is dyed using a jet dyeing machine.